

Receiving Water Limitations Compliance

Status Update Report

City of **Torrance** Beach 2010-11

Background

Following receipt of and response to a 2008 NOV and 13383 Order, the City prepared and submitted a Receiving Waters Limitation Compliance Report for Dry Weather at Coordinated Shoreline Monitoring location SMB 6-1 (Herondo Street extended) as an attachment to the NPDES MS4 Individual Annual Report for Fiscal Year 2007-2008. Following submittal of the Compliance Report, the City did not receive a request from the Regional Board to modify the Report in accordance with Part 2. 3. b) of the MS4 Permit. Absent any such request from the Regional Board, the City assumed that the measures described in the RWL Compliance Report were satisfactory to the Regional Board.¹

The MS4 Permit requires the City to provide a RWL Compliance status report in alternating years following submittal of the first report. Accordingly, a RWL Compliance status report for Dry Weather at SMB 6-01 was submitted with the City's 2009-10 Individual Annual Report. Another status report for SMB 6-01 is not required until 2011-2012 reporting year. The City has not received a response from the RWQCB's staff on the RWL reports filed in 2007-2008 or 2009-2010.

During this reporting year, the RWQCB has removed the Santa Monica Bay Bacteria Dry Weather TMDL from the permit, and the RWQCB Executive Officer rescinded the NOV's issued to the City in 2008 and 2009, which originally triggered the need to file the report for SMB 6-01.

While the TMDLs are still incorporated into the Basin Plan, the Dry Weather waste load allocations are not incorporated into the Permit, and no active NOV is on file related to this zero point shoreline monitoring location. According to Finding 24 of California Regional Water Quality Control Board, Los Angeles Region's Resolution 2002-022:

The numeric targets in this TMDL are not water quality objectives and do not create new bases for enforcement against dischargers apart from the water quality objectives they translate. The targets merely establish the bases through which load allocations and waste load allocations (WLAs) are calculated. WLAs are only enforced for a discharger's own discharges, and then only in the context of its National Pollutant Discharge Elimination System (NPDES) permit, which must be consistent with the assumptions and requirements of the WLA. The Regional Board will develop permit requirements through a subsequent permit action that will allow all interested persons,

¹ In 2009, the RWQCB staff issued a second NOV for the same exceedances alleged in the 2008 NOV and Order, asking for additional information. The City timely filed a second response, which is on file at the RWQCB office.

including but not limited to municipal storm water dischargers, to provide comments on how the waste load allocations will be translated into permit requirements.

Without (a) an active NOV notifying the City that it may be causing or contributing (b) to an enforceable water quality standard in the permit, it is unclear whether the City must continue RWL reporting.

It is also unclear whether Receiving Waters Limitation Compliance provisions apply to waste load allocations for winter dry weather bacteria at Santa Monica Bay Beaches since the TMDL was to have been re-opened two years after the effective date of the TMDL to re-evaluate allowable winter dry weather exceedance days based on additional data on bacteria indicator densities in the wave wash. The TMDL compliance monitoring provisions required that the reference beach and a number of other monitoring sites were relocated from their historical locations 50 yards away to a new location as close as possible to the “wave wash” or “zero point” and no farther away than 10 meters down current of freshwater outlets, which are either major storm drains that have measurable flow to the beach during dry weather or at the mouth of creeks. SMB 6-1 is such a re-located monitoring location and thus a re-evaluation of the winter dry weather waste load allocations is necessary. The City is unable to determine how many winter dry weather exceedance days are authorized under the permit, and when an RWL Compliance report is required, until such re-opener takes place.

It is similarly not clear whether or when an RWL Compliance report may be required for the waste load allocations assigned under the Wet Weather TMDL. Full compliance is not yet required and the Regional Board staff has not reconsidered the TMDL as required--this reconsideration was supposed to take place four years after the effective date and two years before the jurisdictional groups pursuing an integrated water resources approach for compliance were to achieve a 10% cumulative percentage reduction from the total wet weather exceedance-day reductions for that jurisdictional group as identified in Table 7-4.6 of the TMDL.² Additionally, the interim milestones were to be re-evaluated considering planning, engineering and construction tasks based on the written implementation plan submitted to the Regional Board two years after the effective date of the TMDL. Additionally, for Jurisdictional Group 5, reconsideration of the TMDL is necessary in order to re-calculate the interim milestones and revise Table 7-4.6 Interim Compliance Targets by Jurisdictional Group for the Wet Weather TMDL to account for the additional shoreline monitoring site that was added at 28th Street extended in Manhattan Beach, SMB 5-2. The RWQCB has not established methods for calculating the mandatory interim reductions, leaving the City unable to determine what the interim waste load allocations should be and whether they have been met. There are numerous problems with calculating the Rolling Geometric Mean objectives according to the method established in the TMDL and with the zero exceedance waste load allocations, themselves, including but not limited to:

1. The Santa Monica Bay Beaches Bacteria TMDLs have established numeric targets of no exceedances of the geometric mean objectives at any time, yet the reference beach

² Los Angeles Regional Water Quality Control Board, December 12, 2002. Resolution No. 2002-022 Attachment A, Amendment to the Water Quality Control Plan—Los Angeles Region to incorporate Implementation Provisions for the Region’s Bacteria Objectives and to incorporate the Santa Monica Bay Beaches Wet-Weather Bacteria TMDL.

has exhibited numerous exceedances of the geometric mean target—during the current reporting year, alone, the reference beach has exceeded the geometric mean target for 30 days during summer dry weather using the geometric mean method of calculation delineated in the TMDL.

2. Based on the current method for calculating the Rolling Geometric Mean with respect to enterococcus data, the compliance target of 35 MPN/100 mL is problematic. The current method for calculation assumes that the detection limit should be inserted for days in which there is no detection of enterococcus, however since the typical detection limit for enterococcus is 10 MPN/100mL, an entire month of no detections would yield a geometric mean value of 10 MPN/100mL which is nearly one third the target value without any actual detections of enterococcus. This can also be a problem for fecal coliform/E. coli depending on which laboratory is doing the analysis since the detection limits are either 10 MPN/100mL [Michelson Laboratory] or 67 MPN/100 mL [City of LA EMD] while the geometric mean target is 200MPN/100 mL for fecal coliform/e. coli. By contrast for Total Coliform the geometric mean target is 1,000/100mL while the detection limits are again either 10 MPN/100 mL or 67 MPN/100 mL, depending on the laboratory. Utilizing the detection limit of 67 MPN/100 mL for Total Coliform in the calculation has much less influence on the calculated geometric mean value than for enterococcus or fecal coliform since the detection limit for Total Coliform is less than 1/10th that of the geometric mean target. The result will be that the Geometric Mean for Enterococcus and fecal coliform will be exceeded much more often than for total coliform. It would be more useful to insert a value in place of the detection limit that is some fraction of the detection limit, e.g., 1/100mL which would shift a non-detect day to less than 1/10th of the target value.
3. A study by Southern California Coastal Water Research Project (SCCWRP) of non-human impacted reference beaches in southern California during wet weather found that “Enterococci exhibited the greatest rate of water quality threshold exceedances <24 hours following recorded rainfall and the greatest persistence 3 days following a rain event.”³ This persistence of enterococcus in southern California watersheds and in marine waters may not correlate well with the persistence of pathenogenic agents for which enterococcus is supposed to function as a surrogate.

Thus until the Dry- and Wet-Weather Santa Monica Bay Beaches Bacteria TMDLs are reconsidered, the City does not believe that the receiving waters limitation compliance objectives with respect to geometric mean targets can be properly evaluated.

Due to the legal complexity of the City’s reporting obligations, the City is providing a compliance report for SMB 6-1 (also referred to as “Herondo”) below with respect to summer dry weather and winter dry weather single-sample bacterial objectives. The abovementioned notices and the monitoring reports did not evidence, or conclusively prove that discharges from the City’s MS4 cause or contribute to a violation of water quality standards. These notifications

³ SCCWRP 2006. *Microbiological Water Quality at non-Human Impacted Reference Beaches in Southern California During Wet Weather*, Southern California Coastal Water Research Project Technical Report 495, by John F. Griffith, Kenneth C. Schiff, and Gregory S. Lyon, December 2006.

of water quality standards exceedances in the receiving waters have, however, prompted the City to evaluate its stormwater program and further investigate sources of potential pollutants and ways to treat and prevent stormwater runoff. As set forth in the City's responses to the 2008 and 2009 NOV, and in its 2007-2008 and 2009-2010 RWL reports, the City does not necessarily concede responsibility for the alleged exceedances at any of the monitoring locations and is providing this information as a good faith means of fully apprising the Regional Board of its activities and to comply with the provisions of the MS4 permit.

As discussed in the Assessment of Program Effectiveness attachment to the reporting year 2010-11 Annual Report, in response to Item 5 *A description of water quality improvements or degradation in your watershed over the past fiscal year*, the two open beach shoreline monitoring locations in Hermosa Beach, SMB 5-4 and SMB 5-5, have continued to exhibit high water quality during both summer dry weather and winter dry weather consistent with their historically high water quality and both sites continue to exhibit lower exceedance rates than the reference beach. Thus no receiving waters limitation compliance reports are necessary for those monitoring locations.

1. A DESCRIPTION OF THE POLLUTANTS THAT ARE IN EXCEEDANCE AND AN ANALYSIS OF POSSIBLE SOURCES

It is well documented in the literature that total coliform, fecal coliform and enterococcus bacteria, which are the indicator bacteria used in setting recreational standards for water quality and for setting compliance targets under the SMBBB TMDL, are ubiquitous in the natural and developed environments. Consequently indicator bacteria present at a particular shoreline monitoring location may be the result of a combination of:

- activity in the immediate vicinity of the monitoring station, e.g., marine mammals, birds, or human recreational activity;
- a result of heavy surf or spring tides which have been shown to suspend and reactivate indicator bacteria resident in beach sand; or,
- if there is flow of runoff conveyed via a storm drain or even a natural watercourse to the shoreline, then the source of indicator bacteria is also likely to be associated with a variety of land use activities and natural sources within the drainage area tributary to the location of interest; and,
- the conveyance system, itself, may provide conditions favorable to incubation and regrowth of indicator bacteria populations, as such the conveyance system can be a source of indicator bacteria loading to the receiving water.

The Herondo storm drain outlet is a concrete box 12 feet wide by 5 feet high and is typically buried in sand during summer dry weather. The storm drain outfall is located just inside the southern border of the City of Hermosa Beach with Redondo Beach. The City of Hermosa Beach owns the beach at the outfall.

The Herondo storm drain is owned by the Los Angeles County Flood Control District and is equipped with a low flow diversion. According to information provided by the Los Angeles County Department of Public Works (County) this diversion:

- has an in-line storage capacity of 12,626 gallons,
- operates 24 hours per day, 12 months per year during dry weather, and
- has a maximum permitted diversion rate of 120 gallons per minute during off peak hours and 60 gallons per minute permitted during peak hours in accordance with recent modifications to the discharge permit from the Sanitation Districts of Los Angeles County.

The Herondo storm drain collects runoff from land areas in the Cities of Torrance, Redondo Beach, Hermosa Beach and Manhattan Beach. Land areas within the City of Torrance tributary to the Herondo storm drain comprise approximately 1453 acres or 50% of the total Herondo drainage area.

The total drainage area to the Herondo storm drain varies from (3,042 to 2,644 acres) depending on how the discharge from the Amie Sump, which is a flood control basin in the City of Torrance, is being operated. There are two means of discharge from the Amie Sump: during the summer months the discharge is pumped to a storm drain leading to the Dominguez Channel, however during the winter months when the force main storm drain line to the Dominguez Channel is hydraulically limited under wet weather conditions, discharge from the Amie Sump is pumped to the Herondo storm drain via a force main with a larger capacity. It is the policy of the City of Torrance to pump dry weather flows from the Amie Basin to the Dominguez Channel and wet weather flows to the Herondo storm drain by switching force mains. The dates when the force mains are switched conform with the SMBBB TMDL for summer dry and winter wet weather seasons. The Amie Pump Station has two pumps, one 100HP and the other 150HP. The 100HP pump has a capacity of 1370 GPM at 82.5 Ft. TDH. The 150HP pump has a capacity of 2245 GPM at 106 Ft. TDH. After a rain event it would be expected that both pumps would be running for 3 to 5 days. Since the maximum permitted pumping rate of the Herondo low flow diversion is 60 gallons per minute during peak use and 120 gallons per minute off-peak, it is possible for there to be post-storm flows that exceed the diversion capacity and occur four (4) to five (5) days after a qualifying rainfall event that would appear to be dry weather discharges but in reality are stormwater flows. The City of Torrance is working to improve the SCADA system to better document pump run times.

The Herondo storm drain outfall is tidally influenced in that it lies deeper than the mean high tide elevation so there is frequently standing water in the final reach of the storm drain and this situation creates conditions conducive to the re-growth of indicator bacteria. Because the Herondo storm drain is tidally influenced, in order to prevent the diversion of sea water to the sanitary sewer during high tide, the low flow diversion is located approximately ¼ mile from the outfall. One storm drain lateral draining an area of 47 acres of the City of Hermosa Beach connects to the Herondo storm drain downstream of the diversion so that it is not intercepted by the diversion.

SUMMER DRY WEATHER REPORTING YEAR 2010-2011

There were two (2) summer dry weather exceedance days reported at SMB 6-1 during this MS4 NPDES Permit annual reporting period (note that there are two distinct periods of \$ASQRWLUpdate-Herondo Drain-FY10-11

summer dry weather during the reporting period of the annual report, the period from July 1st to October 31st in 2010 and the period from April 1st to June 30th in 2011). The two summer dry weather exceedance days occurred on Wednesday, September 22, 2010 and on Monday, June 27, 2011. On both of those exceedance days, recorded observations of the storm drain outfall noted that the Herondo storm drain was buried, with no observed flow to the wave wash. Thus discharges from the MS4 did not cause or contribute to the exceedances measured in the receiving waters on those days.

The City of Los Angeles Environmental Monitoring Division (EMD) in its monthly summaries of shoreline monitoring data identified four additional days of exceedances of bacteria indicators at SMB 6-1 from Tuesday, October 19 through Friday, October 22, 2010 as summer dry weather exceedances in the EMD summary reports, however these should have been categorized as wet weather exceedances. Although the County USC rain gauge registered 0.04 inches of rainfall on October 19, 2010 and 0.06 inches of rainfall on October 20, 2010 which would not qualify as wet weather events under the TMDL, both the LAX rainfall gauge and the City of Redondo Beach rainfall gauges measured 1/10th inch of rainfall or greater on each of those days. Specifically, the LAX rain gauge registered 0.12 inches of rainfall on October 19, 2010 and 0.1 inches of rainfall on October 20, 2010, while the City of Redondo Beach rain gauge which is closer to SMB 6-1 than either the LAX or USC rain gauge registered 0.24 inches of rainfall on October 19, 2010 and 0.14 inches on October 20, 2010. So the four exceedance days at SMB 6-1 from October 19 through 22, 2010 should be properly categorized as wet weather exceedances.

CUMULATIVE SUMMER DRY WEATHER MONITORING DATA

The SMB 6-1 shoreline monitoring site located at the zero point of the Herondo storm drain outfall is being sampled five days per week. Sampling and analysis at SMB 6-1 is conducted by Los Angeles County Department of Health Services (DHS) on Mondays under the SMBBB TMDL Coordinated Shoreline Monitoring Plan. Additionally, under the Monitoring and Reporting Program (CI 6948) of the MS4 Permit, additional routine monitoring on four other days of the week (Tues-Fri) has been conducted at monitoring site SMB 6-1 by the City of Los Angeles Environmental Monitoring Division. In contrast, the reference beach monitoring site is sampled just once per week under the Coordinated Shoreline Monitoring Plan. Comparison of data between the reference beach SMB 1-1 and SMB 6-1 at Herondo necessitates a normalization of exceedance days expressed as a percentage of exceedance days out of total number of days sampled in order to make a relevant and informed comparison of the water quality at the two sites.

Table 1 summarizes comparative data for six summers plus a partial summer for 2011 under the Coordinated Shoreline Monitoring Plan at SMB 6-1 and the reference site at Leo Carillo beach. The table lists the absolute number of days on which a shoreline water quality sample exceeded one or more of the three indicator bacteria single-sample targets (single-sample exceedance days). The table also compares exceedance rates for SMB 6-1 with the reference site at Leo Carillo beach. The exceedance rates in Table 1 are calculated by dividing the number of single-sample exceedance days by the number of sampling days in the summer season. There are 214 days during the summer dry weather period April 1st through October 31st which equates to 153 sampling days for a site like SMB 6-1 which is monitored Monday through Friday [$214 / 7 \times 5 = 153$] and 31 sampling days for a site like the reference beach which is monitored just once per week [$214 / 7 = 31$]. Dividing the number of exceedance days by the number of sampling days at each respective site yields a normalized exceedance rate. Based

on the exceedance rates calculated as described in the foregoing, the water quality at SMB 6-1 is on average better by a factor of seven (7) than the water quality at the reference site at Leo Carrillo Beach during summer dry weather, i.e., over the six+ summers of data collected since 2005, the exceedance rate at SMB 6-1 Herondo has averaged 1.5% whereas the exceedance rate at the reference beach SMB 1-1 has averaged 10.6%. These data also show that the Regional Board's finding that historical monitoring data from the reference beach indicate no exceedances of the single sample targets during summer dry weather was based on an inadequate data set because even though there were apparently no exceedances of the TMDL targets at the reference beach during the five-year period examined in establishing the TMDL, there were twenty (20) exceedances at the reference beach during the first five years of summer dry weather monitoring under the Coordinated Shoreline Monitoring Plan. Or it may be that the relocation of the monitoring site to the zero point of the zero point/wave wash at the reference beach has increased the frequency of exceedances at the reference beach. Most likely both of these factors are involved.

Based on more than six summers of monitoring data, the normalized data substantiate that the shoreline monitoring site SMB 6-1 has exhibited a frequency of exceedances that is on average significantly lower than the reference beach so that the low flow diversion appears to be effective in mitigating the summer dry weather low flows. Thus **discharge from the MS4 at SMB 6-1 does not cause or contribute to the violation of Water Quality Standards or water quality objectives for indicator bacteria during summer dry weather** and the infrequent exceedances of the bacterial objectives at SMB 6-1, like those at the reference beach, are attributed to natural background causes such as presence of ocean debris, birds, dead birds or marine mammals, heavy surf, increased wave height and wind speed.⁴

⁴ February 2008 Los Angeles County Department of Public Works. Santa Monica Bay Beaches Bacterial Indicator TMDL Compliance Study-Final Report, prepared by Weston Solutions.

TABLE 1					
SANTA MONICA BAY BEACHES BACTERIA (SMBBB) TMDL					
EXCEEDANCE RATES					
SMB 6-1 SAMPLING STATION COMPARED WITH REFERENCE BEACH					
SUMMER DRY WEATHER – April 1-Oct 31 ⁵					
		SMB 6-1 at Herondo			SMB 1-1 Reference Beach
Summer		Single-Sample Exceedance Days	Exceedance Rate based on 153 estimated sampling days per summer (five days/wk)		Exceedance Rate based on 31 sampling days per summer season (one day/wk)
2005		4	2.6%		723%
2006		6	3.9%		1135%
2007		1	0.6%		00%
2008		2	1.3%		26.4%
2009		1	0.6%		00%
2010		1	0.6%		00%
2011 *		1	0.6%		39.7%
AVG			1.5%		10.6%

⁵ Summer 2011 data shown through June 2011

WINTER DRY WEATHER EXCEEDANCES DURING REPORTING YEAR 2010-11

There were twelve (12) winter dry weather exceedance days reported at SMB 6-1 during this MS4 NPDES Permit annual reporting period.

Two winter dry weather exceedance days on November 4th and 5th, 2010 resulted from samples collected at SMB 6-1 which exceeded the TMDL targets for enterococcus; Total coliform and E. coli were also detected in these samples but not at levels above the TMDL targets. These days coincided with very large NPDES permitted discharges from the Water Replenishment District (WRD) Desalter into the Amie detention basin in Torrance which discharges to the Herondo storm drain during the winter season. Records indicate that on November 4th 2010 WRD discharged 831,945 gallons of water were discharged from the WRD desalter and heavy flows from the Herondo storm drain outfall were observed at the time of sampling. On November 5th 2010 records indicate that 2,158,560 gallons from the WRD desalter were discharged into the Amie detention basin, however at the time of sampling at SMB 6-1 some water was observed ponded at the outfall but no flow was reaching the wave wash. Such volumes as are permitted to discharge from the WRD desalter can readily overwhelm the Herondo storm drain low flow diversion which has storage capacity of less than 13,000 gallons and diversion rates of 60 gallons per minute during the day and 120 gallons per minute at night during off-peak hours. Had these WRD discharges occurred just one week earlier while outflow from the Amie basin was still directed to the Dominguez Channel, these exceedances might not have occurred. Similar incidents occurred during reporting year 2009-10 when two dry weather exceedances at the Herondo outfall coincided with large discharges from the WRD desalter and with documented heavy flow from the Herondo outfall. The MS4 agencies are not responsible for discharges from the MS4 caused by non-stormwater discharges into the MS4 in accordance with an NPDES permit.

Winter dry weather exceedances that occurred November 12, 2010 and November 25, 2010 were the result of enterococcus levels at 140 MPN/100 mL and 120 MPN/100mL in the samples, respectively; these were not far above the TMDL target of 104 MPN/100 mL for enterococcus. It is notable that there were no detections of either total coliform or fecal coliform in the same samples and that observations of the outfall by the sampling team on both of those days indicated that there was some ponded water on the beach, but no flow from the storm drain reaching the surf. Thus it appears unlikely that discharges from the MS4 were causing or contributing to these exceedances. The sampling crew did note heavy amounts of ocean debris and seaweed on the beach in the vicinity on both days, so it is possible that the modest levels of enterococcus observed in those samples were associated with the heavy seaweed and ocean debris deposited on the beach.

On January 18, 2011, analytical results from the sample at SMB 6-1 indicated levels of E. coli and enterococcus above the TMDL targets. This was a Tuesday following the President's Day holiday so LA County DHS performed the sampling as though it were a Monday. DHS does not make observations of the storm drain flow and position, so there is no information available regarding whether there was flow from the 28th Street storm drain to the wave wash that day. On Mondays, Michelson Labs, the contract lab for J5&6 that performs the normal Monday sampling makes observations at the DHS monitoring sites but since Michelson does not conducting sampling or observations on Tuesdays, they could not provide the missing observations for DHS samples as they do on Mondays. It is notable that six out of eight samples collected and analyzed by DHS in the same sampling run on January 18, 2011 from

Grand Avenue in El Segundo to Topaz Street in Redondo Beach exhibited exceedances of the enterococcus –this is an unusual coincidence for a dry weather day and may suggest a QA/QC problem with the samples collected by DHS that day.

On January 19, 2011 levels of both E. coli and enterococcus were detected above the TMDL targets at SMB 6-1 while total coliform were detected at levels lower than the TMDL target. Water was observed ponded on the beach at the mouth of the storm drain, but no flow from the storm drain reached the surf at the time of sampling.

On February 11, 2011 all three indicator bacteria were detected above the TMDL targets in at SMB 6-1 and at the same time medium flow was observed reaching the surf from the storm drain outfall.

On Monday, February 14, 2011 enterococcus was detected above the TMDL target at SMB 6-1. Water was observed ponded on the beach at the mouth of the storm drain, but no flow from the storm drain reached the surf at the time of sampling.

On Monday, March 7th, 2011, sample collected at SMB 6-1 exceeded the TMDL target for enterococcus, water was observed ponded at the mouth of the storm drain and flow was observed reaching the wave wash.

On Tuesday, March 8th, 2011, the sample collected from SMB 6-1 exceeded the TMDL target for enterococcus. Low flow was observed reaching the wave wash from the storm drain outfall. Also on March 8th 2011, a large die-off of fish, primarily sardines, occurred in Redondo Beach King Harbor which scientists believe was caused by a precipitous drop in dissolved oxygen resulting from massive numbers of fish swarming into the harbor. Sea birds were reported feeding on the dying fish; and the subsequent clean up took more than a week. King Harbor lies adjacent and immediately to the south of the Herondo outfall and SMB 6-1.

On March 9th, 2011, the day after the fish kill began, the sample collected by City of Los Angeles EMD at SMB 6-1 exceeded the target for enterococcus; however LA County DHS also sampled the site on March 9th as a follow up to the exceedance on March 7th and no detection of any of the bacterial indicators was found in that sample. This calls into question whether an exceedance occurred on March 9th or not. Water was observed ponded at the mouth of the storm drain but flow did not reach the wave wash, however heavy amounts of excrement were observed on the beach, possibly associated with seagulls and other shore birds feeding on the dead fish in King Harbor, also high tide occurred at 10:52 am that morning.

On March 17th, 2011, the sample collected at SMB 6-1 exceeded the TMDL target for enterococcus. Water was observed ponded at the mouth of the storm drain, but no flow was observed reaching the wave wash. Moderate amounts of beach refuse and ocean debris were observed on the beach.

Thus of the twelve winter dry weather exceedance days that occurred at the SMB 6-1 monitoring station during the current reporting year, on only three of those exceedance days was flow from the Herondo storm drain outfall observed to be reaching the surf, and on one of those three days the flow was attributed to a NPDES-permitted discharge to the MS4 not within the control of the **City of Torrance**.

CUMULATIVE WINTER DRY WEATHER MONITORING DATA

The SMB 6-1 shoreline monitoring site located at the zero point of the Herondo outfall is being sampled five days per week during the winter as well as the summer periods. Sampling and analysis at SMB 6-1 is conducted by Los Angeles County Department of Health Services (DHS) on Mondays under the SMBBB TMDL Coordinated Shoreline Monitoring Plan. Additionally, under the Monitoring and Reporting Program (CI 6948) of the MS4 Permit, additional routine monitoring on four other days of the week (Tues-Fri) has been conducted at monitoring site SMB 6-1 by the City of Los Angeles Environmental Monitoring Division. In contrast, the reference site is sampled just once per week under the Coordinated Shoreline Monitoring Plan. Comparison of data between the reference beach SMB 1-1 and SMB 6-1 at Herondo necessitates a normalization of exceedance days expressed as a percentage of exceedance days out of total number of days sampled in order to make a relevant and informed comparison of the water quality at the two sites.

Table 2 summarizes data for six winters under the Coordinated Shoreline Monitoring Plan at SMB 6-1 in comparison with the reference site at Leo Carillo beach. The table lists the absolute number of days on which a shoreline water quality sample exceeded one or more of the three indicator bacteria single-sample targets (single-sample exceedance days). The table also compares exceedance rates for SMB 6-1 with the reference site at Leo Carillo beach. The exceedance rates in Table 2 are calculated by dividing the number of single-sample exceedance days by the number of sampling days in the summer season. There are 151 days during the winter dry weather period April 1st through October 31st (152 days during a leap year) which equates to 108 sampling days for a site like SMB 6-1 which is monitored Monday through Friday [$151 / 7 \times 5$] and 22 sampling days for a site like the reference beach which is monitored just once per week [$151/7$]. Dividing the number of exceedance days by the number of sampling days at each respective site yields a normalized exceedance rate.

Based on the exceedance rates calculated as described in the foregoing, the water quality at SMB 6-1 is exhibiting an exceedance rate that is twice that of the reference beach. Following the conversion to year-round dry weather operation of the low flow diversion in November 2009, we expected to see a decrease in winter dry weather exceedance rates, which did occur in reporting year 2009-10. So we are surprised that the rates increased during the 2010-11 reporting year, and other than the two days of large permitted dry weather discharges from the WRD desalter, the City does not have an explanation at this time of the cause of this increase.

TABLE 2

SANTA MONICA BAY BEACHES BACTERIA (SMBBB) TMDL
EXCEEDANCE RATES
SMB 6-1 SAMPLING STATION COMPARED WITH REFERENCE BEACH

WINTER DRY WEATHER – November 1- April 30

	Inches of Rainfall at Redondo Beach Nov 1 – Mar 30	SMB 6-1 at Herondo		SMB 1-1 Reference Beach	
Winter		Single- Sample Exceedance Days	Exceedance Rate based on 108 sampling days per winter (five days/wk)	Single-Sample Exceedance Days	Exceedance Rate based on 22 sampling days per winter (one day/wk)
2005-06	6.1	13	12%	1	4.5%
2006-07	1.56	4	3.7%	1	4.5%
2007-08	10.19	10	9.3%	2	9.1%
2008-09	5.52	7	6.5%	0	0%
2009-10⁶	9.57	5	4.6%	0	0%
2010-11	12.24	12	11.1%	1	4.5%
AVG			7.9%		3.8%

⁶ Low Flow Diversion on Herondo storm drain began operation year-round during dry weather

2. A PLAN TO COMPLY WITH THE RWL;

The City and other J5&6 agencies have relied on the guidance of the Regional Board staff report for the SMBBB TMDL that low flow diversions were the anticipated means of compliance with the dry weather bacteria TMDL for discharges from the MS4.⁷ To optimize the utility of the Herondo low flow diversion, the City of Torrance initiated a change in operation to divert flows from the Amie basin to the Dominguez Channel rather than to Herondo storm drain during the summer dry weather period under the SMBBB TMDL thereby reducing the volume of dry weather flows reaching the Herondo low flow diversion during summer (April 1 through October 31). In addition, Jurisdictional Group 5 and 6 agencies have been working with local water agencies to obtain notification of permitted water agency water discharges to the storm drain system that, while not a source of bacteria per se, may be sufficiently large so as to exceed the storage capacity of low flow diversions and result in bypassing of the low flow diversion carrying with it indicator bacteria entrained from the storm drain system. These efforts also led the Office of the State Fire Marshall's to develop a Water-Based Fire Protection System Discharge Best Management Practice Manual⁸. This strategy of utilizing and optimizing the operation of low flow diversions has been successful with respect to summer dry weather conditions such that discharge from the MS4 at SMB 6-1 does not cause or contribute to the violation of Water Quality Standards or water quality objectives for indicator bacteria during summer dry weather and the infrequent exceedances of the bacterial objectives at SMB 6-1 that do occur from time to time, are attributed to natural background conditions.

In anticipation of the winter dry weather compliance deadline, we requested and received permit modifications from LACSD for the low flow diversion of the Herondo storm drain to allow operation 12 months per year and 24-hours per day during dry weather instead of just during the off-peak hours from 6pm-6am during the summer dry period. This change in operating permit allows for operation of the system year-round instead of only during the summer period and for the doubling of the diversion pumping rate during off-peak hours to 120 gallons per minute. According to LACSD staff the conversion to 24-hour year-round operation was implemented as of November 2009; however modifications of the diversion pump control system have not been made to allow for dual peak flow rates to take advantage of the permitted off-peak rate of 120 gallons per minute. Work on the modification to the control system to allow for the higher off-peak pumping rate has been delayed due to a flow meter failure. LACFCD staff have initiated a requisition to replace the flow meter so that the modification to the control system can be completed.

⁷ LARWQCB January 14, 2002. Total Maximum Daily Load to Reduce Bacterial Indicator Densities during Dry Weather at Santa Monica Bay Beaches, prepared by California Regional Water Quality Control Board, Los Angeles Region. Section 8.2 Phase I: Compliance during Summer Dry Weather.

⁸ California Department of Forestry & Fire Protection, California State Fire Marshal, August 2011. Water –Based Fire Protection System Discharge Best Management Practice Manual, prepared by the California State Fire Marshal in cooperation with the State Water Resources Control Boards, Division of Water Quality, Storm Water Section. DRAFT

In addition to the installation and operational optimization of low flow diversions to address summer dry weather and winter dry weather waste load allocations, the Jurisdictional Group 5 and 6 agencies have been working cooperatively to develop and implement plans to address the wet weather waste load allocations for bacteria which measures will also address dry weather waste load allocations.

In July 2005, the Jurisdictional Group 5 and 6 (J5/6) agencies submitted their SMBBB TMDL Implementation Plan (IP) to the LARWQCB describing a strategy for improving wet weather and dry weather water quality which included a series of programmatic and structural best management practices (BMPs) that when implemented could help ensure compliance with the SMBBB TMDL. The J5/6 IP utilizes an integrated, iterative management approach which addresses multiple pollutants, identifies beneficial use opportunities, and collaborates with multiple agencies in its overall solution. The strategy proposed for reducing exceedances relies on a combination of measures designed to reduce bacteria and other pollutant loads from sources by minimizing the amount of dry-weather and wet-weather runoff at the outfall while at the same time pursuing integrated water resource opportunities. The J5/6 IP divides activities into three components which are being implemented over three phases. Activities include: Programmatic Solutions, Site-Specific Structural BMPs, and Source Identification and Controls. Initial phases of the implementation of each component are intended to set up frameworks for more detailed implementation in subsequent phases.

The J5/6 agencies have already completed Phase I of the Structural BMP management approach of the Implementation Plan utilizing available grant funding to pilot various structural BMPs. Evaluation of the performance of these pilot projects is either completed or under way consistent with Phase II of the structural BMP management approach of the Implementation Plan. The pilot BMP projects that informed these decisions include:

- the Manhattan Beach Porous Paving Project, Prop 50 Santa Monica Bay Restoration Grant Program;
- the Hermosa Strand Infiltration Trench Project, Prop 50 Clean Beaches Initiative & USEPA ARRA/CWSRF Expanded Use Project;
- the Pier Avenue Improvement Project, USEPA ARRA/CWSRF Expanded Use Project; and
- the Alta Vista Park Diversion and Reuse Project (funding for the Alta Vista Park Diversion and Reuse Project was provided in full or in part by the American Recovery and Reinvestment Act of 2009 and the Clean Water State Revolving Fund through an agreement with State Water Resources Control Board).

The City has expended \$146,877 of its general fund to jointly fund implementation activities under the J5&6 Implementation plan which in combination with contributions from other J5&6 agencies totals \$591,028 in implementation activities.

The following additional implementation activities were completed by the close of reporting year 2010-11:

- 1) Based on experience with the BMP pilot projects the agencies determined to move forward to begin Phase III of the Structural BMP management approach to identify infiltration-based structural BMPs in the two high priority drainage areas. A structural BMP siting study was completed during reporting year 2010-11 to identify optimal

locations for structural BMPs utilizing infiltration systems to address wet weather and dry weather Bacteria TMDL compliance within the high priority 28th Street storm drain and Herondo storm drain tributary areas. Structural BMP concepts for the optimally sited BMPs were developed to the 10% design phase and a quantitative analysis was conducted using the EPA Storm Water Management Model (SWMM) Version 5 and the 10 year rainfall period between 1990 thru 1999 to analyze the level of compliance with the wet weather Bacteria TMDL that could be achieved if all nine structural BMP projects were installed. The integrated water resources benefits of the structural BMP project concepts were also evaluated.

Note that the Hermosa Strand Infiltration Trench serves as a pilot-scale version of the conditions and challenges which may be applicable in evaluating the feasibility of designing a solution to the Herondo storm drain outfall to allow for both dry weather and wet weather flows to be infiltrated on the beach—both storm drains are tidally influenced which limits the ability to utilize diversion to the sanitary sewer at the outfall and complicates the challenge of managing wet weather flows via infiltration. Shake-down of operation and a full year of post-construction monitoring are complete with a final project report expected in September of 2011.

- 2) The agencies undertook an investigation of whether exfiltration from sewer infrastructure near the beach could be contributing to bacteria detected in receiving water near the outfalls at the two high priority shoreline monitoring locations. The investigation traced the potential transport pathway between the compliance monitoring locations and critical sewer infrastructure that, if leaking, might contribute to elevated compliance sampling results in near shore waters. The transport pathway was assessed by sampling shallow groundwater between critical sewer infrastructure and compliance monitoring locations. No indicator bacteria were detected in the shallow groundwater between the critical sewer infrastructure and the high priority shoreline monitoring locations. The findings of this study indicate that groundwater transport from exfiltrating sewer lines does not appear to be a likely source of dry-weather indicator bacteria concentrations causing exceedances at the shoreline monitoring location.
- 3) A source identification study of the drainage areas tributary to 28th Street and Herondo storm drains was conducted using a methodology consistent with USEPA Illicit Discharge Detection and Elimination field methods. This included:
 - a. GIS based land use analysis to identify high priority sub-drainages based on land use
 - b. GIS based analysis to identify high priority sub-drainages based on business type from business license information
 - c. Interviews with NPDES inspectors to determine known areas/businesses of potential bacteria sources

- d. Development of a map of high priority monitoring locations for sampling effort
- e. Three rounds of winter dry-weather sampling to identify and characterize high priority sub-drainages with respect to bacteria concentrations

Based on the results of the source identification study, recommendations were made for additional investigations and bacterial source controls.

- 4) Public outreach programs directed at dry weather runoff and bacterial load reductions have been developed and are being implemented jointly by Jurisdictional Groups 5 & 6. A key component of that effort is the joint website www.southbaystormwaterprogram.com which is being used to disseminate programmatic information as well as a means for obtaining feedback for effectiveness assessment, e.g., the baseline survey which was conducted in early 2011. Programmatic Solutions for Jurisdictional Groups 5&6 development have included:
 - a. Outreach audience target group identification
 - b. Development of outreach message, theme and logo
 - c. Website design and installation
 - d. Pre-program survey development
 - e. Standardization of Clean Bay Restaurant inspections/certification
 - f. Establish outreach program to K-12 Schools
 - g. Model practices and inspection checklists for maintenance of municipal parks and recreation maintenance
 - h. Target audience brochure for pet waste management/outreach

Over the next twelve months, the City will work on coordinating with other responsible agencies to look for funding to implement recommendations for source control and structural BMP measures identified in the studies just completed and described in 1 and 3 above.

3. CHANGES TO THE SQMP TO ELIMINATE WATER QUALITY EXCEEDANCES

The City continues to implement the Countywide Storm Water Quality Management Plan (SQMP). In addition to the Countywide SQMP, the City is also implementing additional measures as they are developed under the Jurisdictional Group 5 & 6 Implementation Plan for the Santa Monica Bay Beaches Bacteria TMDL.

To date, the City has undertaken a variety of measures both independently and jointly with its Jurisdictional Group 5 & 6 partners to reduce dry weather and wet weather flows within the storm drain system and to control sources of bacteria which have the potential to enter the storm drain system:

- The cities of **Hermosa Beach, Manhattan Beach, Redondo Beach, and Torrance**, in cooperation with the Santa Monica Bay Restoration Commission, have developed and implemented across the entire watershed the Clean Bay Restaurant Certification program targeting food service establishments with exposure to stormwater. The agencies developed a comprehensive 28-point storm water inspection checklist that requires 100% compliance in order for the facility to be awarded a Clean Bay Restaurant Certification by the Santa Monica Bay Restoration

Commission. Restaurants are inspected annually under the Clean Bay Restaurant Program. A training manual developed as a guideline for inspectors provides consistency in program implementation among the participating cities. This program is considered to be an accelerated full scale Phase III implementation activity, i.e., the phase I pilot stage was skipped in lieu of an accelerated full-scale Phase III implementation. Further enhancement of this program was completed this year through the development of a policy on rescinding Clean Bay Certificates from facilities that are observed in violation of the MS4 Permit requirements, e.g., if a restaurant is observed hosing down an outside patio.

- The City plumbing code requires grease removal systems for food service establishments (FSEs) and provides for annual inspection of the grease recovery systems which is combined with the Clean Bay Restaurant/NPDES inspection program. In order to be certified under the Clean Bay Restaurant Program, food service establishments must be in compliance with the grease control ordinance.
- City of Torrance has adopted a Water Conservation and Supply Shortage and Sustainability Program Ordinance. Implementation of this ordinance will reduce dry weather runoff to Santa Monica Bay as a result of the reduction in outside water use and waste by:
 - Limiting outside watering to 15 minutes per day
 - Limiting the number of watering days to 3 per week
 - Hand watering must utilize hand-held hose with automatic shut-off nozzle and restaurants must use water brooms for cleaning patio areas
 - Leaks, waste, overwatering, overspray and runoff are prohibited
 - Residents washing their own cars must use a hand held hose with automatic shut-off nozzle or a bucket system
- In March 2001 the City of Torrance entered into an agreement with the Santa Monica Bay Restoration Commission to receive a \$3,300,000 Prop 84 Clean Beaches Grant, and appropriated \$512,430 of City funds for the Stormwater Basin Enhancement Program final design and construction. This project will improve the Amie, Henrietta and Entradero Detention Basins to be regional BMPs to treat and infiltration 90% of the City's Herondo Drain watershed runoff. When this project is completed there will be no urban run off from the basin watersheds during dry season and all rain events will treated and some stormwater infiltrated, depending on the size of the rain events. Construction is scheduled for summer of 2012. The project will not only increase groundwater recharge, but will also restore habitat, conserve potable water by converting the Entradero Basin Park to recycled water, provide educational opportunities, and improve public access to the Entradero Basin.

It is not clear whether the increase in winter dry weather exceedances during reporting year 2010-11 at SMB 6-1 is the beginning of a trend, or is simply an anomalous period. Given the lack of flows reaching the receiving water during many of the exceedances days, the anomalous fish-kill in Redondo Beach during other exceedances days and the extent of the City's new BMPs noted above, it is reasonable to find that the increase in exceedances is not related to discharges from the MS4 owned and operated by the City of Torrance. As such,

specific revisions to the City's SQMP are not being proposed at this time. The City of Torrance will work with the other responsible agencies to investigate any continued elevation in winter dry weather exceedances and if they are found to be related to discharges from the MS4, will pursue solutions as expeditiously as possible within the limits of fiscal resources.

4. ENHANCED MONITORING TO DEMONSTRATE COMPLIANCE

The SMB 6-1 (Herondo) shoreline monitoring site is being monitored for the REC-1 indicator bacteria five days per week and the City does not believe any additional monitoring is needed to demonstrate compliance. The higher frequency of monitoring at SMB 6-1 in comparison to the reference beach and other monitoring sites contributes to the erroneous perception that there is a higher rate of summer dry weather exceedances at SMB 6-1. As discussed under Section 1 above, the data demonstrate that this is not the case.

5. RESULTS OF IMPLEMENTATION

The installation of the low flow diversion in August 2005 and efforts by the responsible agencies to optimize the effectiveness of the low flow diversion have resulted in improved shoreline water quality in the vicinity of SMB 6-1 during summer dry weather. Because the shoreline monitoring location was relocated in November 2004 to the zero point of the storm drain outfall where previously it had been located 50 yards up coast, comparable data sets are not available to make an accurate comparison of pre- and post-diversion shoreline water quality at this location. Having now six complete summers of monitoring data, the normalized data substantiate that the shoreline monitoring site SMB 6-1 has a frequency of exceedances that is on average significantly lower than the reference beach so that the low flow diversion is effective and that occasional exceedances at SMB 6-1 are most likely attributed to natural background causes such as presence of ocean debris, birds, dead birds or marine mammals, heavy surf, increased wave height and wind speed. In addition, occasional exceedances can be associated with permitted discharges associated with protection and operation of potable water sources.

As mentioned above, it is not clear whether the increase in winter dry weather exceedances during reporting year 2010-11 at SMB 6-1 is the beginning of a trend, or is simply an anomalous period. The City of Hermosa Beach will work with the other responsible agencies to investigate any continued elevation in winter dry weather exceedances and if they are found to be related to discharges from the MS4, will pursue solutions as expeditiously as possible within the limits of fiscal resources. The City is constantly evaluating its stormwater program and investigating sources of potential pollutants and ways to treat and prevent stormwater runoff, and will continue to assess implementation of its existing BMPs and investigate new ways to improve its comprehensive water quality program.